IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: §
    Wakelam et al. § Docket No.: 28207.3
     §
Application Number: 09/518,697 § Art Unit: 2100
     §
Filed: March 3, 2000 § Examiner: Thompson
     §
For: COMPUTER-IMPLEMENTED §
      AUTOMATED BUILDING DESIGN AND §
      MODELING AND PROJECT COST §
      ESTIMATION AND SCHEDULING §
      SYSTEM §

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Commissioner for Patents
Washington, DC 20231

1.   (Amended) A computer-implemented automated building design and modeling [and project cost estimation and scheduling ("DMES")] system comprising:

a spatial database;

means for [creating instances of] defining parametric objects [in said spatial database,] wherein each of [said] the parametric objects represents a construction component_ of a [structure] building being modeled and [includes a user interface for enabling a user to input design data thereto; and] together the parametric objects describe information sufficient for assembly of a complete building model for the building's construction as constrained by the input of selected client requirements, and further wherein each of the parametric objects includes an interface through which the parametric object communicates information with other parametric objects;

a user interface for user input of selected client requirements to specify a configuration of the building model; and

means for initiating automatic assembly of [said] the building model utilizing the defined parametric objects, whereby the parametric objects for the building model are created in the spatial database and customized based upon the client requirements entered via the user interface; and whereby the parametric objects communicate information via their interfaces to

accurately assemble the [to create a] building model.

2.   (Amended) The system of claim 1 further comprising means for creating a [graphical] comparison representation of selected information pertaining to variations of the assembled [said] building model.

3.   (Amended) The system of claim 2 wherein said [graphical] comparison representation is [selected from the group consisting of design development drawings, specifications, construction drawings, shop drawings, and details.] created by:

saving the results of an initial assembling of the building model that utilizes an initial value for at least one selected parameter of the building;

changing the initial value for the at least one selected parameter by a selected amount, reassembling the building model, and saving the new results;

repeating the changing, reassembling, and saving for a selected number for variations of the building model; and

outputting a comparison representation of selected information for the reassembled building models represented by the saved results.

4.   (Amended) The system of claim 1 wherein the parametric objects further describe construction cost information, the system further comprising means for creating a cost estimate for [said structure from said] the building model.

5.   (Amended) The system of claim 1 wherein the parametric objects further describe construction schedule information, the system further comprising means for creating a construction schedule for [said structure from said] the building model.

28.   (Amended) A method of implementing a computer-implemented automated building design and modeling [and project cost estimation and scheduling ("DMES")] system, the method comprising:

[creating instances of] defining parametric objects [in said spatial database,] wherein each of [said] the parametric objects represents a construction component of a [structure] building being modeled [and includes a user interface for enabling a user to input design data

thereto;] and <u>together the parametric objects describe information sufficient for assembly of a complete building model for the building's construction as constrained by the input of selected client requirements, and further wherein each of the parametric objects includes an interface through which the parametric object communicates information with other parametric objects;</u>

inputting [design data for use by said instantiated parametric objects;] <u>selected client requirements to specify a configuration of the building model;</u> and

automatically assembling [said parametric objects to create a building model for said structure.] <u>the building model utilizing the defined parametric objects, whereby the parametric objects for the building model are created in a spatial database and customized based upon the inputted client requirements; and whereby the parametric objects communicate information via their interfaces to accurately assemble the building model.</u>

29. (Amended) The method of claim 28 further comprising generating a [graphical] <u>comparison</u> representation of <u>selected information pertaining to variations of the assembled</u> [said] building model.

30. (Amended) The method of claim 29 wherein said [graphical] representation is [selected from the group consisting of design development drawings, specifications, construction drawings, shop drawings, and details.] <u>created by:</u>

<u>saving the results of an initial assembling of the building model that utilizes an initial value for at least one selected parameter of the building;</u>

<u>changing the initial value for the at least one selected parameter by a selected amount, reassembling the building model, and saving the new results;</u>

<u>repeating the changing, reassembling, and saving for a selected number for variations of the building model; and</u>

<u>outputting a comparison representation of selected information for the reassembled building models represented by the saved results.</u>

31. (Amended) The method of claim 28 <u>wherein the parametric objects further describe construction cost information, the method</u> further comprising creating a cost estimate for said structure from said building model.

32.   (Amended) The method of claim 28 <u>wherein the parametric objects further describe construction cost information, the method</u> further comprising creating a construction schedule for said structure from said building model.

35.   (Amended) The method of claim 28 wherein said <u>inputting is performed utilizing</u> <u>a</u> user interface <u>that</u> comprises a dialog box.

36.   (Amended) The method of claim 33 further comprising, for each object that is [instantiated] <u>created</u> in the spatial database:

detecting a physical clash between an existing instance of an object and an instance of an object currently being placed by said massing element; and

avoiding the detected physical clash by automatically relocating said instance of an object currently being placed according to predefined placement rules.